

Entergy.

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William F. Maguire
Site Vice President

RBG-47685

May 18, 2016

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Subject: Licensee Event Report 50-458 / 2015-009-01
River Bend Station - Unit 1
Docket No. 50-458
License No. NPF-47

BBF1-16-0057

Dear Sir or Madam:

In accordance with 10 CFR 50.73, enclosed is the subject Licensee Event Report. This document contains no commitments. This is a supplement to the report originally submitted on January 26, 2016. New information is highlighted by change bars in the right margin. If you have any questions, please contact Mr. Marvin Chase at 225-381-3612.

Sincerely,



WFM / dhw

Enclosure

cc: U. S. Nuclear Regulatory Commission
Region IV
1600 East Lamar Blvd.
Arlington, TX 76011-4511

NRC Sr. Resident Inspector
P. O. Box 1050
St. Francisville, LA 70775

INPO
(via ICES reporting)

IEZZ
NRR

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Page 2 of 2

Central Records Clerk
Public Utility Commission of Texas
1701 N. Congress Ave.
Austin, TX 78711-3326

Department of Environmental Quality
Office of Environmental Compliance
Radiological Emergency Planning and Response Section
Ji Young Wiley
P.O. Box 4312
Baton Rouge, LA 70821-4312



LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of
digits/characters for each block)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by Internet e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME

River Bend Station - Unit 1

2. DOCKET NUMBER

05000 458

3. PAGE

1 OF 3

4. TITLE

Automatic Reactor Scram Due to Partial Loss of Offsite Power Caused by Fault in Local 230kV Switchyard

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED			
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER		
11	27	2015	2015	009	01	05	18	2016	FACILITY NAME	DOCKET NUMBER		
										05000		
9. OPERATING MODE			11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)									
1			<input type="checkbox"/> 20.2201(b)			<input type="checkbox"/> 20.2203(a)(3)(i)			<input type="checkbox"/> 50.73(a)(2)(ii)(A)		<input type="checkbox"/> 50.73(a)(2)(viii)(A)	
			<input type="checkbox"/> 20.2201(d)			<input type="checkbox"/> 20.2203(a)(3)(ii)			<input type="checkbox"/> 50.73(a)(2)(ii)(B)		<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
			<input type="checkbox"/> 20.2203(a)(1)			<input type="checkbox"/> 20.2203(a)(4)			<input type="checkbox"/> 50.73(a)(2)(iii)		<input type="checkbox"/> 50.73(a)(2)(ix)(A)	
			<input type="checkbox"/> 20.2203(a)(2)(i)			<input type="checkbox"/> 50.36(c)(1)(i)(A)			<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)		<input type="checkbox"/> 50.73(a)(2)(x)	
10. POWER LEVEL 100			<input type="checkbox"/> 20.2203(a)(2)(ii)			<input type="checkbox"/> 50.36(c)(1)(ii)(A)			<input type="checkbox"/> 50.73(a)(2)(v)(A)		<input type="checkbox"/> 73.71(a)(4)	
			<input type="checkbox"/> 20.2203(a)(2)(iii)			<input type="checkbox"/> 50.36(c)(2)			<input type="checkbox"/> 50.73(a)(2)(v)(B)		<input type="checkbox"/> 73.71(a)(5)	
			<input type="checkbox"/> 20.2203(a)(2)(iv)			<input type="checkbox"/> 50.46(a)(3)(ii)			<input type="checkbox"/> 50.73(a)(2)(v)(C)		<input type="checkbox"/> 73.77(a)(1)	
			<input type="checkbox"/> 20.2203(a)(2)(v)			<input type="checkbox"/> 50.73(a)(2)(i)(A)			<input type="checkbox"/> 50.73(a)(2)(v)(D)		<input type="checkbox"/> 73.77(a)(2)(i)	
			<input type="checkbox"/> 20.2203(a)(2)(vi)			<input type="checkbox"/> 50.73(a)(2)(i)(B)			<input type="checkbox"/> 50.73(a)(2)(vii)		<input type="checkbox"/> 73.77(a)(2)(ii)	
						<input type="checkbox"/> 50.73(a)(2)(i)(C)			<input type="checkbox"/> OTHER		Specify in Abstract below or in NRC Form 366A	

12. LICENSEE CONTACT FOR THIS LER

LICENSEE CONTACT

Marvin Chase, Director - Regulatory & Performance Improvement

TELEPHONE NUMBER (Include Area Code)

(225) 381-3612

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
(see text)									

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ☒ NO15. EXPECTED
SUBMISSION
DATE

MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On November 27, 2015, at 4:31 a.m. CST, with the plant operating at 100 percent power, an automatic reactor scram occurred following the loss of power to both divisions of the reactor protection system (RPS). This condition resulted from a single-phase fault in the local 230kV switchyard. The initial response of the protective relays for the switchyard caused the breakers connected to the north 230kV bus in the switchyard to trip. The fault caused a voltage transient on the in-plant switchgear sufficient to trip the scram relays in the Division 2 RPS, resulting in a half-scram. The action of the protective relays continued, eventually causing the de-energization of reserve station service line no. 1. This lead to the loss of Division 1 RPS and a full reactor scram. The Division 1 and 3 emergency diesel generators started as designed to restore power to their respective safety-related onsite electrical distribution subsystems. No safety-related systems were out of service at the time of the scram, and reactor pressure and water level were promptly stabilized. All reactor control rods inserted properly. Multiple actuations of the main steam safety-relief valves (SRVs) occurred during the event. The nuclear steam supply system vendor reported this action was likely due to a localized pressure transient in the SRV instrumentation lines. SRV tailpipe temperature recorders indicated that all valves re-seated correctly following the initial transient. The cause of the event was an animal-induced fault in the 230kV switchyard that resulted in the automatic trip of the north bus feeder breaker to the RSS No. 1. The fault also caused the south bus feeder breaker to trip, de-energizing RSS No. 1.

NRC FORM 366A
(11-2015)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104

EXPIRES: 10/31/2018



LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
River Bend Station - Unit 1	05000- 458	YEAR 2015	SEQUENTIAL NUMBER 009	REV NO. 01

NARRATIVE

REPORTED CONDITION

On November 27, 2015, at 4:31 a.m. CST, with the plant operating at 100 percent power, an automatic reactor scram occurred following the loss of power to both divisions of the reactor protection system (RPS)[JC]. This condition resulted from a single-phase fault in the local 230kV switchyard. The initial response of the protective relays for the switchyard caused the breakers connected to the north 230kV bus in the switchyard to trip. The fault caused a voltage transient on the in-plant switchgear sufficient to trip the scram relays in the Division 2 RPS, resulting in a half-scram. The action of the protective relays continued, eventually causing the de-energization of reserve station service line no. 1. This lead to the loss of Division 1 RPS and a full reactor scram.

The main generator remained online until it was tripped, as designed, by the reverse-power relays when reactor steam pressure was insufficient to drive the main turbine. The Division 1 and 3 emergency diesel generators started as designed to restore power to their respective safety-related onsite electrical distribution subsystems. Both trains of the standby gas treatment system [BH] started, and the primary containment isolation system logic responded as designed. No safety-related systems were out of service at the time of the scram, and reactor pressure and water level were promptly stabilized. All reactor control rods inserted properly. The "B" reactor recirculation pump should have automatically downshifted to slow speed, but instead tripped off.

Multiple actuations of the main steam safety-relief valves (SRVs)(**RV**) occurred during the event. The nuclear steam supply system vendor reported this action was likely due to a localized pressure transient in the SRV instrumentation lines. SRV tailpipe temperature recorders indicated that all valves re-seated correctly following the initial transient.

This event is being reported in accordance with 10 CFR 50.73(a)(2)(iv)(A) as an automatic actuation of the reactor protection system, the primary containment isolation logic, and the Division 1 and 3 emergency diesel generators.

INVESTIGATION and IMMEDIATE CORRECTIVE ACTION

When power was restored to both divisions of RPS, the primary containment isolation signal was reset, and the affected systems were restored to service. The isolation had caused a partial loss of the normal service water system, resulting in the automatic actuation of the standby service water system. The isolation had also caused the spent fuel pool cooling pump to trip, and operators aligned the alternate pump for service. The plant was taken to cold shutdown in a controlled manner.

CAUSAL ANALYSIS

The cause of the event was an animal-induced fault in the 230kV switchyard that resulted in the automatic trip of the north bus feeder breaker to the RSS No. 1. The fault also caused the south bus feeder breaker to trip, de-energizing RSS No. 1. The associated voltage transient on the in-plant switchgear also caused the trip of relays on both RPS buses for the scram and containment isolation logic circuits.

Contributing to this event was the insufficient recognition of risk in power operations with both RPS buses on the alternate power sources.

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
River Bend Station - Unit 1	05000- 458	YEAR	SEQUENTIAL NUMBER	REV NO.
		2015	009	01

CORRECTIVE ACTIONS TO PREVENT RECURRENCE

The following actions are being taken to prevent a recurrence of the event.

- The transmission department is evaluating the appropriate means of minimizing animal intrusion to the 230kV switchyard.
- An engineering study was performed to evaluate the transient limitations of the RPS motor-generator sets and alternate power sources, and the associated risk of the impact to the RPS scram logic. The study also provided recommendation for operational restrictions on aligning the RPS buses to the alternate power sources. The RPS system design criteria document was updated to identify the risk associated with aligning both RPS buses to the alternate power source during power operations.
- A design change was implemented to correct a legacy error in the wiring configuration of the Division 2 RPS bus discovered during this investigation. This modification will significantly reduce the risk of tripping both RPS buses for a given fault if both buses are aligned to the alternate power sources.

SAFETY SIGNIFICANCE

Other than the response of the reactor safety-relief valves and the "B" reactor recirculation pump, the plant responded as designed to the reactor scram. The emergency diesel generators responded as designed, and no conditions requiring the actuation of the emergency core cooling systems occurred. The operators were able to quickly stabilize RPV parameters without complication. This event was of minimal significance with regard to the safety of the public.

(NOTE: Energy Industry Identification System component function identifier and system name of each component or system referred to in the LER are annotated as (**XX**) and [XX], respectively.)